

be transferred between the main transfer mechanism and the load lock chamber, and controlling at least oxygen concentration and pressure;

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a transferring arm capable of moving in the predetermined direction and transferring the substrate between the heating process chamber and the load lock chamber, and transferring the substrate between the main transfer mechanism and the heating process chamber through the opening; and

a gate valve shielding the heating process chamber from the load lock chamber.

9. (Amended) The apparatus as set forth in claim 1,

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wherein the transferring arm has a waiting portion in the load lock chamber for temporarily placing the substrate thereon when the heating process for the substrate is performed in the heating process chamber in a changed processing condition.

11. (Amended) An apparatus being disposed adjacent to a main transfer mechanism for processing a substrate, comprising:

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a heating process chamber in which a heating process is performed for the substrate;
a load lock chamber, integrally connected to the heating process chamber in a predetermined direction, having an opening closable with a shutter allowing the substrate to be transferred between the main transfer mechanism and the load lock chamber, and controlling at least oxygen concentration and pressure;

a transferring arm capable of moving in the predetermined direction and transferring the substrate between the heating process chamber and the load lock chamber, and transferring the substrate between the main transfer mechanism and the heating process chamber through the opening, and performing a cooling process for the substrate; and

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a gate valve shielding the heating process chamber from the load lock chamber.

13. (Amended) The apparatus as set forth in claim 11,

wherein the temperature of the heating process in the heating process chamber is in the range from 400°C to 450°C, whereas the temperature of the heating process in the transferring arm is in the range from 150°C to 250°C.

Please add new Claims 26-37 as follows:

26. (New) An apparatus for processing a substrate, comprising:

a first processing block having at least a coating process unit coating a processing solution on the substrate;

a heating and cooling unit having a heating process chamber heating the substrate, a load lock chamber integrally connected to the heating process chamber in a predetermined direction and disposed between the heating process chamber and the first processing block and controlling at least oxygen concentration and pressure, and a gate valve shielding the heating process chamber from the load lock chamber; and

a main transfer mechanism for transferring the substrate between the first processing block and the heating and cooling unit;

wherein the load lock chamber has a transferring arm capable of moving in the predetermined direction and transferring the substrate between the heating process chamber and the load lock chamber and performing a cooling process for the substrate, an opening allowing the substrate to be transferred between the transferring arm and the main transfer mechanism, and a shutter allowing the opening to be opened and closed.

27. (New) The apparatus as set forth in claim 26, further comprising:
a second processing chamber disposed adjacent to the first processing chamber,
having at least two heating and cooling processing units; and
wherein the main transfer mechanism is disposed between the two heating and cooling
units, transferring the substrate between the heating process chamber and the load lock
chamber, and transferring the substrate between the first processing block and the second
processing block.

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28. (New) The apparatus as set forth in claim 26, wherein the heating process
chamber comprising:
a first exhausting portion vacuum exhausting the heating process chamber;
a second exhausting portion normally exhausting the heating process chamber; and
a selecting portion adaptively selecting the first exhausting portion or the second
exhausting portion and causing the selected-means to operate.

29. (New) The apparatus as set forth in claim 28,
wherein the first exhausting portion reduces the inner pressure of the heating process
chamber to around 1330 Pa or less, and
wherein the second exhausting portion reduces the inner pressure of the heating
process chamber to around 100000 Pa or less.

30. (New) The apparatus as set forth in claim 26, the heating and cooling unit
comprising:

a controller controlling a temperature of the heating process for the substrate in the heating process chamber.

31. (New) The apparatus as set forth in claim 30,
wherein the controller is capable of controlling the temperature in the range from 100°C to 800°C.

32. (New) The apparatus as set forth in claim 26,
wherein the temperature of the heating process in the heating process chamber is in the range from 400°C to 450°C, whereas the temperature of the heating process in the transferring arm is in the range from 15°C to 25°C.

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33. (New) The apparatus as set forth in claim 26,
wherein the transferring arm has a waiting portion in the load lock chamber for temporarily placing the substrate thereon when the heating process for the substrate is performed in the heating process chamber in a changed processing condition.

34. (New) The apparatus as set forth in claim 26, the heating and cooling unit comprising:

a supplier supplying an inert gas to the heating process chamber.

35. (New) The apparatus as set forth in claim 26, the heating and cooling unit comprising:

a supplier supplying an active gas to the load lock chamber; and

a sprayer spraying the active gas to a front surface of the substrate in the load lock chamber so as to reform the front surface of the substrate.

36. (New) The apparatus as set forth in claim 26, the heating and cooling unit comprising:

a supplier supplying an inert gas, a reactive gas, or a liquid vaporous substance to the process chamber; and

a pressure reducing portion reducing an inner pressure of the process chamber.

37. (New) The apparatus as set forth in claim 26, the heating and cooling unit comprising:

a controller controlling the supplier and the pressure reducing portion so that the oxygen concentration of the process chamber decreases at a velocity in the range from around 6000ppm/second to 20000ppm/second.

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-25 are presently active in this case; Claims 1, 9, 11, and 13 having been amended; Claims 12 and 15-21 canceled and Claims 26-37 added by way of the present amendment.

In the outstanding Office Action, Claims 1, 6, and 8-9 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,433,785 to Saito; Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Saito as applied to Claims 1, 6